

# EMERGENCY AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

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**DATE: March 20, 2003**  
**AD #: 2003-06-51**

Transmitted as follows is emergency airworthiness directive (AD) 2003-06-51, for the attention of all owners and operators of certain Learjet Model 45 airplanes.

## **Background**

The FAA has received a report of severe vibration followed by a rapid nose down pitch change on a Learjet Model 45 airplane. Investigation revealed that the acme screw of the horizontal stabilizer actuator assembly was fractured. The actuator features a dual load path. The actuator assembly's primary load path, the acme screw, failed. Loads should have been retained by the secondary internal retaining rod. However, the threaded nut on the secondary internal retaining rod had worked completely off, either latently before the fracture or from the effects of the fractured screw. The cause of such failure has not been determined.

There have been no previous reports of fractured acme screws of the horizontal stabilizer actuator assembly. However, there have been reports of cracks in the acme screw. As a result of these reports, the acme screw design was changed in February 2000 to reduce the probability of crack initiation. The fractured acme screw was an early design that did not have the design improvements incorporated to reduce the probability of crack initiation.

Structural failure of the horizontal stabilizer actuator assembly could result in possible loss of control of the airplane.

## **Explanation of Relevant Service Information**

The FAA has reviewed and approved Bombardier Learjet Alert Service Bulletin SB A45-27-15, dated March 20, 2003, including Service Bulletin Compliance Response, which describes procedures for performing an inspection to determine the part number (P/N) of the horizontal stabilizer actuator assembly (A66), and replacing any horizontal stabilizer actuator assembly (A66) having P/N 6627401000-001 or P/N 2A9200F with a new actuator assembly (A66) having P/N 6627401000-005.

## **Explanation of the Requirements of the Rule**

Since an unsafe condition has been identified that is likely to exist or develop on other airplanes of this same type design, this airworthiness directive is issued to require an inspection to determine the P/N of the horizontal stabilizer actuator assembly (A66), and replacement of any horizontal stabilizer actuator assembly (A66) having P/N 6627401000-001 or P/N 2A9200F with a new actuator assembly (A66) having P/N 6627401000-005. The actions are required to be accomplished in accordance with the alert service bulletin described previously.

## **Changes to 14 CFR part 39/Effect on the AD**

On July 10, 2002, the FAA issued a new version of 14 CFR part 39 (67 FR 47997, July 22, 2002), which governs the FAA's AD system. The regulation now includes material that relates to altered products, special flight permits, and alternative methods of compliance. This material is included in part 39. However, as amended, part 39 provides for the FAA to add special requirements for operating an airplane to a repair facility to do the work required by an AD. For purposes of this emergency AD, we have determined that such a special flight permit is permitted, but with certain limitations.

## **Determination of Rule's Effective Date**

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this AD effective in less than 30 days.

This rule is issued under 49 U.S.C. Section 44701 (formerly section 601 of the Federal Aviation Act of 1958) pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this AD.

## **2003-06-51 LEARJET: Docket No. 2003-NM-88-AD.**

Applicability: Model 45 airplanes, serial numbers 45-001 through 45-232 inclusive; certificated in any category.

Compliance: Required as indicated, unless accomplished previously.

To prevent structural failure of the horizontal stabilizer actuator assembly, which could result in possible loss of control of the airplane, accomplish the following:

## **Inspection**

(a) Before further flight, do an inspection to determine the part number (P/N) of the horizontal stabilizer actuator assembly (A66), per paragraph 2., "Accomplishment Instructions," of Bombardier Learjet Alert Service Bulletin SB A45-27-15, dated March 20, 2003, excluding Service Bulletin Compliance Response.

## **Corrective Action**

(b) If a horizontal stabilizer actuator assembly (A66) having P/N 6627401000-001 or P/N 2A9200F is found installed during the inspection required by paragraph (a) of this AD, before further flight, replace the horizontal stabilizer actuator assembly (A66) with a new actuator assembly (A66) having P/N 6627401000-005, per paragraph 2., "Accomplishment Instructions," of Bombardier Learjet Alert Service Bulletin SB A45-27-15, dated March 20, 2003, excluding Service Bulletin Compliance Response.

## **Parts Installation**

(c) As of the effective date of this AD, no person shall install any horizontal stabilizer actuator assembly (A66) having P/N 6627401000-001 or P/N 2A9200F, on any airplane.

## **Special Flight Permit**

(d) Special flights may be issued for flights limited to required flight crew only, per sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

## **Alternative Methods of Compliance**

(e) To request a different method of compliance or a different compliance time for this AD, follow the procedures in 14 CFR 39.19. Alternative methods of compliance for this emergency AD will be approved by the Manager, Wichita Aircraft Certification Office (ACO), FAA. Contact David Hirt, Wichita ACO, FAA, for information about previously approved alternative methods of compliance.

## **Effective Date**

**(f) AD 2003-06-51, issued on March 20, 2003, becomes effective upon receipt.**

For further information contact: David Hirt, Aerospace Engineer, Systems and Equipment Branch, ACE-116W, FAA, Wichita Aircraft Certification Office, 1801 Airport Road, Room 100, Mid-Continent Airport, Wichita, Kansas 67209; telephone (316) 946-4156; fax (316) 946-4407.

Issued in Renton, Washington, on March 20, 2003.

*Original Signed By:*

Michael J. Kaszycki  
Acting Manager,  
Transport Airplane Directorate,  
Aircraft Certification Service.